

\*\*\*Suspended\*\*\*

Trend Study 4-12-96

Study site name: Bennett Creek.

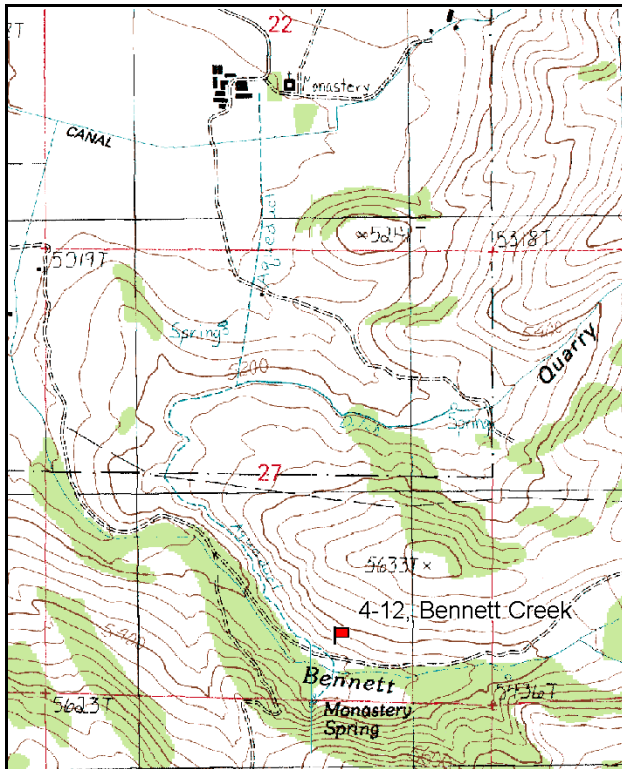
Vegetation type: Low Sagebrush.

Compass bearing: frequency baseline 180 degrees magnetic.

Frequency belt placement: Line 1 (11 & 95ft), line 2 (71ft), line 3 (34ft), line 4 (59ft).

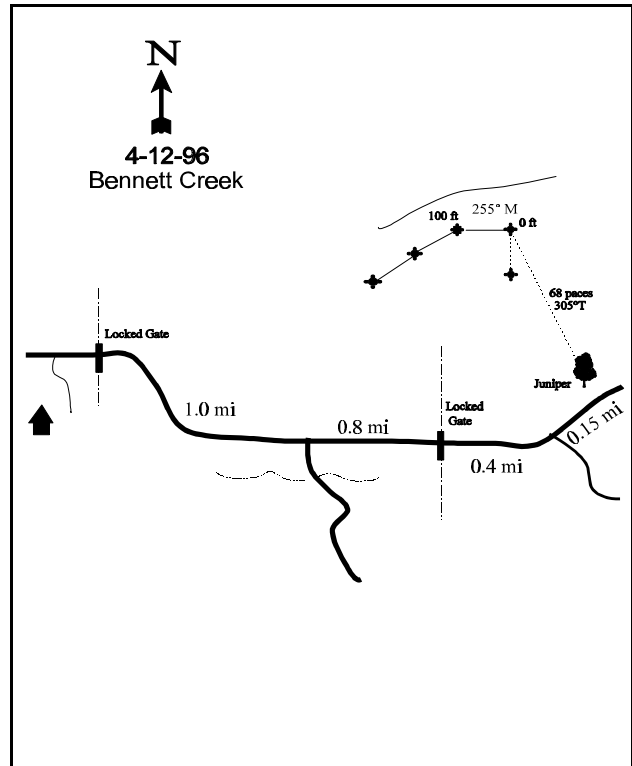
### LOCATION DESCRIPTION

Two keys and permission to cross private land are necessary to access this study site. Brother Nicolas at the monastery can direct you to bypass the first locked gate which is theirs. The second locked gate is owned by Basin Land and Livestock but it was not locked (Steve Hansen in Park City is managing the land). If it is locked the site is a short walk east up the road. At the corner of 1200 South and 9500 East southeast of Huntsville, drive down 8900 East (with a dead end sign) 1.2 miles to a locked gate (monastery). Go through the gate 1 mile to a fork which goes to Sheep Herd Creek. Bear left, go 0.8 miles to another locked gate (Basin Land and Livestock). Past the gate, continue 0.4 miles to a fork. Bear left and go 0.15 miles to a lone juniper which marks the study site. The large lone juniper is 75 feet north of the road. From the juniper, walk 68 paces bearing 305°T to the 0-foot baseline stake.



Map Name: Durst Mountain

Township 6N, Range 2E, Section 26.



Diagrammatic Sketch

UTM 4564136 N 441849 E

## DISCUSSION

### Trend Study No. 4-12

\*\*\***SUSPENDED** - This site was suspended in 2001 and will be reevaluated in 2006. In 1996, the area appeared to support minimal wintering big game. The site is totally dominated by the low value perennial, bulbous bluegrass, annual grasses, and weedy forbs.

The Bennett Creek study was a new trend study put in place in 1990. It samples deer and elk winter range on the south side of Huntsville Valley. Most of the area is private land making access to the isolated state section difficult. The range has been heavily grazed by domestic sheep in the past. Sign of big game was more moderate in 1990, with evidence of sage grouse and a recently transplanted moose observed. During the 1996 reading, no elk and little deer sign was observed. Sheep and cattle sign was encountered. A pair of Sandhill cranes were observed near the site in 1996.

The study is on the south-facing side of a low ridge above Bennett Creek. The slope is 18% with an elevation of 5,700 feet. Soil on the ridge is shallow and very rocky. Effective rooting depth (see methods) was estimated at only about 5 inches due to the rockiness of the soil. Soil texture is a clay loam with a neutral soil reaction (7.2 pH). Due to the high rock content and south facing slope, soil temperatures are high averaging over 72°F at about 5 inches in depth. Vegetative cover combined with rock and pavement cover appear adequate to protect the soil from erosion.

A low, spreading sagebrush dominates the study site. The low sagebrush (*Artemisia arbuscula*) has a compact growth form and appeared moderately hedged in 1990, with some heavy use on the mature plants (32% were classified in form class 3). Seedling and young sagebrush were very common and vigor was good on all age classes that year. Sagebrush canopy cover averaged 23%. A spotty fire appears to have burned through the site prior to the 1996 reading. This along with the larger sample used in 1996 are mostly the reason for the significant decline in sagebrush density (11,265 plants/acre to 3,700). Currently the sagebrush stand is mostly young (61%) and lightly hedged. Vigor is normal on most plants but poor on 19% of the population which appear chlorotic. The only other shrub found on the site consisted of one broom snakeweed.

Past heavy grazing has eliminated valuable perennial grasses and forbs. The depleted understory is almost exclusively bulbous bluegrass, Sandberg bluegrass, Japanese brome, and cheatgrass. There are occasional remnant bluebunch wheatgrass plants. Forbs are abundant yet dominated by annuals and weedy biennials, primarily curlycup gumweed and yellow salsify which accounted for 77% of the total forb cover in 1996.

### 1990 APPARENT TREND ASSESSMENT

Adequate ground cover translates into a stable soil trend. The soil would have a high hazard of erosion if vegetative cover was removed. There are active gullies in the valley below the site. The site displays a lack of diversity in the depleted understory, but the browse stand is stable. The community is very susceptible to wildfire with the dense understory of weedy annuals.

### 1996 TREND ASSESSMENT

The soil trend is stable. Percent bare ground has declined to less than 1%, while litter cover has declined from 59% to 14%. Vegetation and rock cover adequately protect the soil from significant erosion. The browse trend is down due to a decline in density caused by a burn over some of the area. Seedlings and young plants are still found in good numbers, making it appear that the population will rebound. Trend for the herbaceous understory is stable for grasses but up for forbs. Nested frequency of bulbous bluegrass increased

significantly, although sum of nested frequency for the more preferred Sandberg bluegrass declined significantly. Overall, sum of nested frequency for perennial grasses increased slightly. Sum of nested frequency for perennial forbs increased dramatically. However, this increase came primarily from curlycup gumweed and yellow salsify. The former species is a very undesirable species. Trend for the herbaceous understory is considered slightly down due to the significant increases in low value weedy forbs.

#### TREND ASSESSMENT

soil - stable (3)

browse - down (1)

herbaceous understory - down slightly, very poor condition (2)

#### HERBACEOUS TRENDS --

Herd unit 04 , Study no: 12

| Type                        | Species                  | Nested Frequency |      | Quadrat Frequency |     | Average Cover % |
|-----------------------------|--------------------------|------------------|------|-------------------|-----|-----------------|
|                             |                          | '90              | '96  | '90               | '96 | '96             |
| G                           | Agropyron spicatum       | 9                | 30   | 4                 | 13  | .22             |
| G                           | Bromus japonicus (a)     | -                | 307  | -                 | 94  | 3.51            |
| G                           | Bromus tectorum (a)      | -                | 201  | -                 | 67  | 2.47            |
| G                           | Melica bulbosa           | -                | 2    | -                 | 1   | .00             |
| G                           | Poa bulbosa              | 326              | *367 | 98                | 97  | 35.12           |
| G                           | Poa secunda              | 72               | 60   | 32                | 23  | .53             |
| Total for Annual Grasses    |                          | 0                | 508  | 0                 | 161 | 5.98            |
| Total for Perennial Grasses |                          | 407              | 459  | 134               | 134 | 35.89           |
| Total for Grasses           |                          | 407              | 967  | 134               | 295 | 41.87           |
| F                           | Achillea millefolium     | -                | 1    | -                 | 1   | .15             |
| F                           | Agoseris glauca          | -                | *23  | -                 | 13  | .09             |
| F                           | Ambrosia psilostachya    | -                | 3    | -                 | 1   | .03             |
| F                           | Artemisia ludoviciana    | -                | *12  | -                 | 5   | .36             |
| F                           | Cirsium spp.             | -                | *9   | -                 | 6   | .09             |
| F                           | Collomia linearis (a)    | -                | 2    | -                 | 2   | .01             |
| F                           | Collinsia parviflora (a) | -                | 16   | -                 | 7   | .06             |
| F                           | Erodium cicutarium (a)   | -                | 207  | -                 | 74  | 2.72            |
| F                           | Erigeron divergens       | -                | *13  | -                 | 8   | .26             |
| F                           | Grindelia squarrosa      | 28               | *269 | 14                | 91  | 12.66           |
| F                           | Helianthus annuus (a)    | 14               | 7    | 8                 | 6   | .03             |
| F                           | Lactuca serriola         | 8                | *26  | 4                 | 15  | .10             |
| F                           | Lomatium dissectum       | -                | 3    | -                 | 1   | .00             |
| F                           | Machaeranthera canescens | -                | *23  | -                 | 10  | .05             |
| F                           | Polygonum douglasii (a)  | -                | 6    | -                 | 2   | .01             |
| F                           | Taraxacum officinale     | -                | *15  | -                 | 8   | .09             |

| T<br>y<br>p<br>e          | Species                 | Nested<br>Frequency |      | Quadrat<br>Frequency |     | Average<br>Cover<br>% |
|---------------------------|-------------------------|---------------------|------|----------------------|-----|-----------------------|
|                           |                         | '90                 | '96  | '90                  | '96 | '96                   |
| F                         | Tragopogon dubius       | 20                  | *102 | 10                   | 52  | 1.04                  |
| F                         | Unknown forb-annual (a) | -                   | 30   | -                    | 12  | .06                   |
| F                         | Viola spp.              | -                   | 5    | -                    | 2   | .01                   |
| Total for Annual Forbs    |                         | 14                  | 268  | 8                    | 103 | 2.88                  |
| Total for Perennial Forbs |                         | 56                  | 504  | 28                   | 213 | 14.95                 |
| Total for Forbs           |                         | 70                  | 772  | 36                   | 316 | 17.84                 |

#### BROWSE TRENDS --

Herd unit 04 , Study no: 12

| T<br>y<br>p<br>e | Species               | Strip<br>Frequency | Average<br>Cover % |
|------------------|-----------------------|--------------------|--------------------|
|                  |                       | '96                | '96                |
| B                | Artemisia arbuscula   | 65                 | 2.81               |
| B                | Gutierrezia sarothrae | 1                  | .15                |
| Total for Browse |                       | 66                 | 2.96               |

#### BASIC COVER --

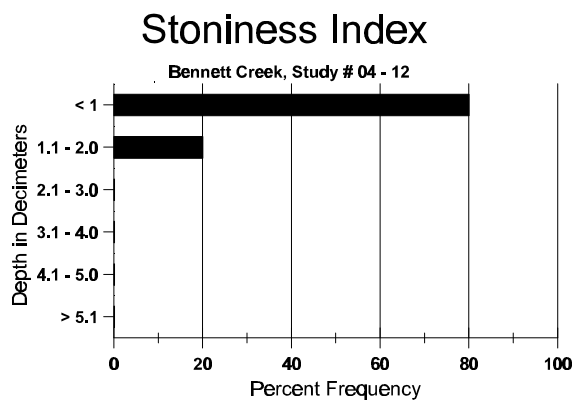
Herd unit 04 , Study no: 12

| Cover Type  | Nested<br>Frequency | Average<br>Cover % |       |
|-------------|---------------------|--------------------|-------|
|             |                     | '90                | '96   |
| Vegetation  | 391                 | 5.50               | 61.56 |
| Rock        | 283                 | 16.75              | 21.93 |
| Pavement    | 174                 | 9.75               | 1.97  |
| Litter      | 362                 | 59.25              | 14.06 |
| Cryptogams  | 12                  | .50                | .06   |
| Bare Ground | 173                 | 8.25               | .96   |

#### SOIL ANALYSIS DATA --

Herd Unit 04, Study no: 12, Bennett Creek

| Effective<br>rooting depth (in) | Temp °F<br>(depth) | PH  | %sand | %silt | %clay | %0M | PPM P | PPM K | dS/m |
|---------------------------------|--------------------|-----|-------|-------|-------|-----|-------|-------|------|
| 4.5                             | 72.4<br>(5.5)      | 6.6 | 41.7  | 34.0  | 24.3  | 3.1 | 30.6  | 208.0 | .6   |



#### PELLET GROUP FREQUENCY --

Herd unit 04 , Study no: 12

| Type   | Quadrat Frequency<br>'96 |
|--------|--------------------------|
| Sheep  | 2                        |
| Rabbit | 1                        |
| Deer   | 1                        |
| Cattle | 5                        |

#### BROWSE CHARACTERISTICS --

Herd unit 04 , Study no: 12

| A<br>G<br>R<br>E                               | Y<br>R | Form Class (No. of Plants) |    |    |   |   |                  |   |   |   |    | Vigor Class       |    |     |       | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. |     | Total |      |  |  |  |  |
|--|--------|----------------------------|----|----|---|---|------------------|---|---|---|----|-------------------|----|-----|-------|--------------------|--------------------------------|-----|-------|------|--|--|--|--|
|  |        | 1                          | 2  | 3  | 4 | 5 | 6                | 7 | 8 | 9 | 1  | 2                 | 3  | 4   |       |                    |                                |     |       |      |  |  |  |  |
| Artemisia arbuscula                            |        |                            |    |    |   |   |                  |   |   |   |    |                   |    |     |       |                    |                                |     |       |      |  |  |  |  |
| S  | 90     | 63                         | -  | -  | - | - | -                | - | - | - | 63 | -                 | -  | -   | 4200  |                    |                                | 63  |       |      |  |  |  |  |
|  | 96     | 9                          | -  | -  | - | - | -                | - | - | - | 9  | -                 | -  | -   | 180   |                    |                                | 9   |       |      |  |  |  |  |
| Y  | 90     | 48                         | 10 | -  | - | - | -                | - | - | - | 57 | -                 | 1  | -   | 3866  |                    |                                | 58  |       |      |  |  |  |  |
|  | 96     | 112                        | -  | -  | - | - | -                | - | - | - | 92 | -                 | 20 | -   | 2240  |                    |                                | 112 |       |      |  |  |  |  |
| M  | 90     | 16                         | 42 | 22 | - | - | -                | - | - | - | 74 | 4                 | 2  | -   | 5333  | 12                 | 21                             | 80  |       |      |  |  |  |  |
|  | 96     | 72                         | -  | -  | - | - | -                | - | - | - | 58 | -                 | 14 | -   | 1440  | 11                 | 15                             | 72  |       |      |  |  |  |  |
| D  | 90     | 11                         | 6  | 14 | - | - | -                | - | - | - | 19 | 2                 | 8  | 2   | 2066  |                    |                                | 31  |       |      |  |  |  |  |
|  | 96     | 1                          | -  | -  | - | - | -                | - | - | - | -  | -                 | 1  | -   | 20    |                    |                                | 1   |       |      |  |  |  |  |
| X  | 90     | -                          | -  | -  | - | - | -                | - | - | - | -  | -                 | -  | -   | 0     |                    |                                | 0   |       |      |  |  |  |  |
|  | 96     | -                          | -  | -  | - | - | -                | - | - | - | -  | -                 | -  | -   | 80    |                    |                                | 4   |       |      |  |  |  |  |
| % Plants Showing                               |        | <u>Moderate Use</u>        |    |    |   |   | <u>Heavy Use</u> |   |   |   |    | <u>Poor Vigor</u> |    |     |       | <u>%Change</u>     |                                |     |       |      |  |  |  |  |
|  |        | '90                        |    |    |   |   | 34%              |   |   |   |    | 21%               |    |     |       | 08%                |                                |     |       | -67% |  |  |  |  |
|  |        | '96                        |    |    |   |   | 00%              |   |   |   |    | 00%               |    |     |       |                    | 19%                            |     |       |      |  |  |  |  |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |    |    |   |   |                  |   |   |   |    |                   |    | '90 | 11265 | Dec:               | 18%                            |     |       |      |  |  |  |  |
|  |        |                            |    |    |   |   |                  |   |   |   |    |                   |    | '96 | 3700  |                    | 1%                             |     |       |      |  |  |  |  |

| A<br>G<br>E                                    | Y<br>R | Form Class (No. of Plants) |   |   |                  |   |   |                   |   |   | Vigor Class    |   |   |     | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. |    | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|---|---|-----|--------------------|--------------------------------|----|-------|
|  |        | 1                          | 2 | 3 | 4                | 5 | 6 | 7                 | 8 | 9 | 1              | 2 | 3 | 4   |                    |                                |    |       |
| Artemisia tridentata vaseyana                  |        |                            |   |   |                  |   |   |                   |   |   |                |   |   |     |                    |                                |    |       |
| M  | '90    | -                          | 1 | - | -                | - | - | -                 | - | - | 1              | - | - | -   | 66                 | 20                             | 30 | 1     |
|  | '96    | -                          | - | - | -                | - | - | -                 | - | - | -              | - | - | -   | 0                  | -                              | -  | 0     |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |   |   |     |                    |                                |    |       |
| '90  |        | 100%                       |   |   | 00%              |   |   | 00%               |   |   |                |   |   |     |                    |                                |    |       |
| '96  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |   |   |     |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                |   |   | '90 | 66                 | Dec:                           | -  |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                |   |   | '96 | 0                  |                                | -  |       |
| Gutierrezia sarothrae                          |        |                            |   |   |                  |   |   |                   |   |   |                |   |   |     |                    |                                |    |       |
| M  | '90    | -                          | - | - | -                | - | - | -                 | - | - | -              | - | - | -   | 0                  | -                              | -  | 0     |
|  | '96    | 1                          | - | - | -                | - | - | -                 | - | - | 1              | - | - | -   | 20                 | 11                             | 16 | 1     |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |   |   |     |                    |                                |    |       |
| '90  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |   |   |     |                    |                                |    |       |
| '96  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |   |   |     |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                |   |   | '90 | 0                  | Dec:                           | -  |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                |   |   | '96 | 20                 |                                |    |       |